RECEIVED
CENTRAL FAX CENTER
JUL 26 2007

IN THE CLAIMS

Please amend claims 1, 4 and 9 as follows:

1. (CURRENTLY AMENDED) An apparatus for adaptive modulation, comprising:

a one-bit modulator, including a quantizer, for generating a binary output signal from an analog input signal using a single quantization bit; and

a multi-bit adapter for generating a scaling signal for scaling a step-size of the modulator using multiple quantization bits, wherein the step-size is adapted based on an estimate of an absolute value of a signal input to the quantizer.

2. (ORIGINAL) The apparatus of claim 1, wherein the adapter includes a companded differential pulse code modulator (DPCM).

3. (ORIGINAL) The apparatus of claim 2, wherein the adapter includes a logarithm term block for companding an absolute value of a filtered error signal, the companded DPCM for modulating an output of the logarithm term block, and an exponential term block for expanding an output of the companded DPCM.

4. (CURRENTLY AMENDED) The apparatus of claim 1, wherein the modulator comprises:

a summing junction for comparing an analog input signal x(n) to an encoding signal v(n) to generate an error signal e(n) representing a difference between the analog input signal x(n) and the encoding signal v(n);

a filter for filtering the error signal e(n) to generate a signal p(n);

[[a]] the quantizer for converting the signal p(n) into a binary output signal y(n);

a multiplier for multiplying the ~~analog~~ binary output signal y(n) by a scaling signal d(n) output by the adapter to generate [[an]] the encoding signal v(n); and

a delay for delaying the encoding signal v(n) to generate a delayed encoding signal v(n-1).

5. (ORIGINAL) The apparatus of claim 4, wherein the adapter produces both the scaling signal d(n), which is an approximation of the absolute value of the signal p(n), and a binary sequence signal q(n) from which the scaling signal d(n) can be re-generated.

6. (ORIGINAL) The apparatus of claim 1, wherein the adapter is used in an adaptive sigma-delta modulator.

7. (ORIGINAL) The apparatus of claim 1, wherein the adapter is used in an adaptive delta modulator.

8. (ORIGINAL) The apparatus of claim 1, wherein the adapter is used as a companded delta modulator.

9. (CURRENTLY AMENDED) An apparatus for adaptive demodulation, comprising:

a multi-bit adapter for receiving a binary sequence signal q(n) from an adapter of an adaptive modulation apparatus and for generating a scaling signal d(n) in response thereto using multiple quantization bits;

a multiplier for multiplying a binary output signal y(n) received from a one bit modulator of the adaptive modulation apparatus by the scaling signal d(n) to generate an encoding signal v(n), wherein the binary output signal y(n) is generated by the one-bit modulator from an analog input signal x(n) using a single quantization bit; and

a low-pass filter for receiving the encoding signal v(n) and for generating a signal $\hat{x}(n)$, which is a re-creation of the analog input signal x(n) to the modulator of the adaptive modulation apparatus;

wherein the binary sequence signal q(n) is generated by the adapter of the adaptive modulation apparatus based on an estimate of an absolute value of an input signal to a quantizer in the one bit modulator of the adaptive modulation apparatus.

10. (ORIGINAL) The apparatus of claim 9, wherein the adapter includes a companded differential pulse code modulator (DPCM).

11. (ORIGINAL) The apparatus of claim 10, wherein the adapter includes a logarithm term block for companding an absolute value of a filtered error signal, the companded DPCM for modulating an output of the logarithm term block, and an exponential term block for expanding an output of the companded DPCM.

12. (ORIGINAL) The apparatus of claim 9, wherein the adapter is used in an adaptive sigma-delta modulator.

13. (ORIGINAL) The apparatus of claim 9, wherein the adapter is used in an adaptive delta modulator.

14. (ORIGINAL) The apparatus of claim 9, wherein the adapter is used as a companded delta modulator.